QUESTIONS REGARDING **MODIS** GEOLOCATION/REGISTRATION REQUIREMENTS

The overall MODIS objective is to make long term observations for the improved understanding of global dynamics and processes occurring in the Earth's oceans, land surface and atmosphere. To meet these objectives, the specific data processing wants and needs of the MODIS science team need to be known so steps can be made to meet these requirements well in advance of the receipt of the first MODIS data.

There are different ways of looking at IMAGE ALIGNMENT. One may speak of alignment accuracy in a GEOGRAPHICAL sense, which the MODIS SDST will call GEOLOCATION, and in the **TEMPORAL** sense, which the MODIS SDST will call **REGISTRATION**. Geolocation will be defined as mapping data relative to a set of axes fixed with respect to the Earth while the latter refers to the alignment of the same point or area from two or more different images taken at different times. This implies the image data may have been resampled to obtain the same sized pixels.

A. GEOLOCATION

1. Accuracy can be expressed in meters or fractions of a pixel. Due to the fact there are three different resolutions what is your required *GEOLOCATION* accuracy? Express your answer as a fraction of a pixel (e.g., 0.2 at 1000m) or so many meters (e.g., 50m at 250.)-

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2. Which data product(s) you are preparing will require this accuracy?

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3. How critical is this requirement to this/these data products? Please circle you choice.

   a. Very critical
   b. Moderately critical
   c. Not critical

4. If it is not possible to meet your accuracy requirement what is the minimum accuracy you would be comfortable with?

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5. What will be the effect if the accuracy you want cannot be achieved? Use the back if you need more space.

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6. If data could be geolocated to a specific ellipsoid or datum which would you prefer? Please circle your choice.

a. Clark's ellipsoid
b. International ellipsoid
c. National geodetic vertical
d. No preference
e. Other _____

7. If you had a choice between having data geolocated to the geoid or an ellipsoid which would you prefer? Please circle your choice.

a. Geoid
b. Ellipsoid
c. No preference

B. REGISTRATION

1. Accuracy can be expressed in meters or fractions of a pixel. Due to the fact there are three different resolutions what is your required registration accuracy? As with geolocation express your answer as a fraction of a pixel (e.g., 0.2 at 1000m) or so many meters (e.g., 50m at 250,).

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2. Of the data product(s) you are preparing which will require this accuracy?

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3. How critical is this requirement to this/these data products? Please circle your choice.

a. Very critical
b. Moderately critical
c. Not critical

4. If it is not possible to meet your accuracy requirement what is the minimum accuracy you would be comfortable with?

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5. What will be the effect if the accuracy you want cannot be achieved?

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6. Should registration be applied to all data (land and ocean)? Please circle your choice.

a. Yes
b. No
c. Uncertain

7. How often should registration be done? Please circle your choice.

a. On demand
b. All data all the time
c. Will do at my own SCF

8. This question pertains to the land discipline. **Due to the uncertainity of global maps, or topographic maps, in general, would data registered to a MODIS derived master global data set be acceptable?** Your comments on this are welcomed.

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9. Another concern pertains to the LEVEL in data processing at which registration should take place. If possible a **MODIS-wide agreement** as to that Level is preferred. Your comments on this are welcomed.

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C. GENERAL QUESTIONS

Since the MODIS data are going to be used for a variety of purposes and by many different investigators everyone's wants and needs are not, unfortunately, going to be the same. Thus, there is a desire to get a consensus of opinion from you, the investigator, concerning specific processing you want the MODIS SDST to undertake. In some cases specific data or information are currently not available (e.g., DEM, or DTM) which would be needed to more accurately geolocate the data. On the other hand, many procedures and programs are available to handle the problem of resampling and image to image registration. Even then some of the investigators will want to "do it myself" while others will want the data in a form which is ready to extract their product with little or not additional processing. Thus, the following list of questions is to elicit your comments and feelings on these and other matters near and dear to your heart.

The first topic considers the problem of resampling. The following possible scenarios are proposed. Please circle your choice.

1. No resampling.

2. Resample the Level-1b data prior to making Level-2

3. Process Level-1b to Level-2 then resample.

4. Other_____

There are many companies with software packages for resampling. It is just a matter of which one. We, the MODIS SDST, do not plan to develop new resampling software.

What procedure, if any, would you want used?

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In any case, a procedure which can be agreed upon by the MODIS investigators would be desireable.

Another problem area concerns accurate geolocation in regions of large topographic variability. Currently there are no global terrain models which could be used to account for viewing perspective when one attempts to geolocate the MODIS data. Therefore, until such data exists, certain caveats concerning geolocation will have to be agreed upon.

1. Certain high relief areas will be misregistered unless regional DEM/DTMs are used.

2. In place of DEM/DTMs a rubber sheeting process will be used.

Your comments on these matters are welcomed.

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